

Amendments to the Specification:

Please amend the paragraph beginning at page 1, line 10, of the specification as follows:

In accordance with recent progress in analysis and examination technologies, measurement of various substances is now becoming possible. Especially in the field of clinical examination, measurement of substances in a body fluid reflecting the disease condition has become possible owing to development of measurement principles based on specific reactions such as biochemical reaction, enzyme reaction and antigen-antibody reaction. To keep up with this trend, a variety of large-sized automatic analyzers have been developed for the purpose of measuring more analytes in terms of more items (analysis of multi analytes for multi items). With such an automatic analyzer, measurement can be achieved at high sensitivity and high accuracy owing to improvement in performance of components of the analyzer and reaction reagents used in the analyzer.

Please amend the paragraph beginning at page 3, line 6, of the specification as follows:

Examples of the measurement devices that conform to the POCT include an enzyme sensor as typified by the above-described blood glucose sensor to which enzyme electrode reaction is applied and a qualitative immune sensor as typified by a test kit for pregnancy to which immune antigen-antibody reaction is applied. In these days, a quantitative immune sensor has also been developed and put into the market. All of them have been achieved as a result of construction of a simple measurement principle accompanied by progress in a technology of obtaining biochemical materials in a solid phase, producing sensor elements and a sensing system. In addition, is also now under development is a technique for downsizing the large-sized automatic analyzer owned by the clinical examination center as described above.

Please amend the paragraph beginning at page 4, line 3, of the specification as follows:

~~The~~ In steps (1) and (2), for example, the separation of blood cells from blood, ~~are~~ is not automated. Therefore, these steps take ~~the~~ most ~~part~~ of the examination time, which has been an obstruction in obtaining quick measurement results. Further, the treatment of the analyte is not what anyone can do because expertise is required. As to a dilution step required for an analyte containing high concentration protein, some devices automatically carry out the step. However, some are complicated in structure and ~~increase the~~ increased in costs, ~~which and~~ are hard to ~~be~~ used use in the POCT. Hence, it is expected that problems will be caused in pretreatment of the analyte even if the large-sized automatic analyzer is downsized in the future by adopting μ -TAS or the like with a view to conforming to the POCT which will be a significant trend in the clinical examination.

Please amend the paragraphs beginning at page 5, line 18, and ending at page 6, line 15, of the specification as follows:

According to certain embodiments of the present invention:

~~It is effective that~~ the first region retains the analyte by capillarity [[.]] ,

~~It is effective that~~ the dynamic effect is ~~acted on~~ caused by change in magnetic field [[.]] ,

~~It is effective that~~ the first region releases the analyte with the movement of the second region [[.]] ,

~~It is effective that~~ the analyte sampling element retains a reagent a1 for reacting with a substance contained in the analyte and/or a reagent b1 for destroying a cell contained in the analyte [[.]] ,

~~It is effective that~~ the reagent a1 is an enzyme, an antigen, an antibody, a receptor or nucleic acid [[.]] ,

~~It is effective that~~ the substance is protein, a hormone, an antibody, an enzyme, an antigen or nucleic acid ~~[[.]]~~ ,

~~It is effective that~~ the reagent b1 is inorganic salt or a surfactant ~~[[.]]~~ ,

~~It is effective that~~ the cell is an erythrocyte, a leukocyte or a platelet ~~[[.]]~~ , or

~~Further, it is effective that~~ a component released from the cell destroyed by the reagent b1 is protein, glycosylated protein, phosphorylated protein, a hormone, lipid, an antibody, an enzyme, an antigen, a receptor, an inhibitor, DNA or RNA.

Please amend the paragraph beginning at page 6, line 11, of the specification as follows:

The present invention further provides an analyte treatment device comprising: an analyte sampling element comprising a first region capable of quantitatively collecting and temporarily retaining an analyte and a second region on which a dynamic effect is acted on from the outside of the second region to move the first region; a reaction cell into which the sampling element is introduced; a means for exerting the dynamic effect on the sampling element in the reaction cell; and an optical measurement system for measuring a reaction in the reaction cell.

Please amend the paragraph beginning at page 6, line 26, of the specification as follows:

In the analyte treatment device, ~~it is effective that~~ the means for exerting the dynamic effect is a magnetic field changing device which exerts the dynamic effect on the sampling element by magnetic force.

Please amend the paragraph beginning at page 7, line 4, of the specification as follows:

Further, ~~it is effective that~~ in certain embodiments of the analyte treatment device of the present invention, the optical measurement system is a light scattering spectrophotometer, a fluorospectrophotometer, an absorption spectrophotometer or an emission spectrophotometer.

Please amend the paragraph beginning at page 7, line 8, of the specification as follows:

Moreover, the present invention provides an analyte treatment method comprising the steps of: (a) quantitatively collecting and retaining an analyte in an analyte sampling element comprising a first region capable of quantitatively collecting and temporarily retaining the analyte and a second region on which a dynamic effect is acted on from ~~the~~ outside of the second region to move the first region; (b) introducing the sampling element retaining the analyte into a reaction system; (c) moving the sampling element by the dynamic effect acted on from ~~the~~ outside of the reaction system to release the analyte from the sampling element and homogeneously mixing the analyte in the reaction system by stirring.

Please amend the paragraphs beginning at page 7, line 20 to page 8, line 19, as follows:

~~It is effective that~~ In certain embodiments of the present invention:

prior to the step (a), a reagent a1 for reacting with a substance contained in the analyte and/or a reagent b1 for destroying a cell contained in the analyte are retained in the sampling element ~~[[.]]~~ ,

~~Also in the analyte treatment method, it is effective that~~ the reagent a1 is an enzyme, an antigen, an antibody, a receptor or nucleic acid ~~[[.]]~~ ,

~~It is effective that~~ the substance is protein, a hormone, an antibody, an enzyme, an antigen or nucleic acid ~~[[.]]~~ ,

~~It is effective that~~ the reagent b1 is inorganic salt or a surfactant ~~[[.]]~~ ,

~~It is effective that~~ the cell is an erythrocyte, a leukocyte or a platelet ~~[[.]]~~ ,

~~It is effective that~~ a component released from the cell destroyed by the reagent b1 is protein, glycosylated protein, phosphorylated protein, a hormone, lipid, an antibody, an enzyme, an antigen, a receptor, an inhibitor, DNA or RNA ~~[[.]]~~ ,

~~It is effective that~~ the reaction system comprises a buffer, a solution containing a reagent a2 for reacting with a substance contained in the analyte or a solution containing a reagent b2 for destroying a cell contained in the analyte ~~[[.]]~~ or

~~It is effective that~~ in the step (c), the analyte and the reaction system are homogeneously mixed by stirring, and at the same time, the reagent a2 reacts with a substance contained in the analyte and/or the reagent b2 destroys a cell contained in the analyte.

Please amend the paragraph beginning at page 11, line 15, of the specification as follows:

With use of the analyte sampling element, as detailed below, a second magnetic substance is moved by a dynamic effect acted thereon from ~~the outside~~ of the second magnetic substance by a magnetic field to move the capillary tube together with the first magnetic substance. Thereby, the analyte is released from the capillary tube by centrifugal force or the like and mixed in a liquid system outside the capillary tube under stirring.

Please amend the paragraph beginning at page 11, line 22, of the specification as follows:

In this context, the capillary tube, which may be referred to as a capillary, is a narrow tube having a diameter that allows capillarity or an assembly obtained by stacking two or more flat plates at a certain interval that allows capillarity. For example, a fabric knitted of warps and wefts obtained by stranding fine fibers may also be used as the capillary tube as long as the fibers or yarns are spaced to such a degree that allows the capillarity. In either case, ~~these allow a device that allows~~ capillarity ~~are~~ is generically referred to as ~~the~~ a capillary tube.

Please amend the paragraph beginning at page 20, line 20, of the specification as follows:

In the analyte treatment method using the analyte sampling element of the present invention, the above-described analyte treating device is used. More specifically, the method includes the steps of: (a) quantitatively collecting and retaining an analyte in an analyte sampling

element comprising a first region capable of quantitatively collecting and temporarily retaining the analyte and a second region on which ~~an~~ a dynamic effect is acted on the second region from ~~the outside~~ the second region to move the first region; (b) introducing the sampling element retaining the analyte into a reaction system; (c) moving the sampling element by the dynamic effect acted on from ~~the outside of the reaction system~~ to release the analyte from the sampling element and homogeneously mixing the analyte in the reaction system by stirring.

Please amend the paragraph beginning at page 23, line 11, of the specification as follows:

The analyte treatment method according to the present invention includes the steps of: quantitatively collecting the analyte into the capillary tube of the sampling element by capillarity; moving in the liquid system the sampling element in which the analyte has been injected by magnetic force acted thereon from ~~the outside of the liquid system~~; and homogeneously mixing the analyte in the capillary tube into the liquid during the movement. This may be referred to as a method of homogeneously mixing the analyte.

Please amend the paragraph beginning at page 25, line 6, of the specification as follows:

FIGs. 7(a) to 7(d) are views illustrating the steps of the analyte treatment method using the sampling element of the present invention. ~~This explanation is given of the case where~~ In this illustration the sampling element 1 shown in FIG. 1 is used, ~~but the adhesive tape 13 is omitted from the drawings.~~ First, as shown in FIG. 7(a), the sampling element 1 ~~is made contact with~~ contacts an analyte 30 to introduce the analyte 30 into a capillary tube 11 by capillarity. Thus, the analyte 30 is retained in the capillary tube 11 of the sampling element 1 as shown in FIG. 7(b).

Please amend the paragraph beginning at page 25, line 16, of the specification as follows:

Then, the sampling element 1 is introduced into a reaction cell 31 (reaction system) containing a liquid system 33. A second magnetic substance 32, i.e., a magnet for the stirrer, is arranged at the outside bottom surface of the reaction cell 31. Due to the rotational movement of the second magnetic substance 32, the sampling element 1 shows the rotational movement in the liquid system, thereby the analyte retained in the capillary tube 11 is released into the liquid system 33 by centrifugal force (FIG. 7(c)). Then, the released analyte 30 and the liquid system 33 are homogeneously mixed by being stirred by the rotating sampling element 1. Thus, a mixture solution 34 (dissolved solution) ~~is resulted~~ results in the reaction cell 31 (FIG. 7(d)).

Please amend the paragraph beginning at page 26, line 3, of the specification as follows:

The present invention further provides a handling device for the analyte sampling element to be adopted in the analyte treatment method using the sampling element. The handling device detachably holds an analyte sampling element comprising a first region capable of quantitatively collecting and temporarily retaining an analyte and a second region on which a dynamic effect is acted on from outside of the second region to move the first region and is capable of introducing the sampling element retaining the analyte into the reaction system.

Please amend the paragraph beginning at page 26, line 12, of the specification as follows:

Further, ~~it is effective that~~ in certain embodiments of the present invention, the handling device has a mechanism that allows the handling device to retain a liquid system for the reaction system and introduce the liquid system into the reaction system together with the sampling element.

Please amend the paragraph beginning at page 27, line 26, of the specification as follows:

FIGs. 9(a) and 9(b) show how the sampling element ~~[[1]]~~ 50 is detached from the tip of the handling device ~~[[40]]~~ 48. FIG. 9(a) and 9(b) are enlarged views illustrating the tip portion of the handling device ~~[[40]]~~ 48.

Please amend the paragraph beginning at page 28, line 4, of the specification as follows:

As seen in FIGs. 9(a) and 9(b), a member 53 includes a core 53b and a cylinder 53a capable of showing up-and-down movements along the core 53b. In this case, a first magnetic substance 51 and a capillary tube 52 in a sampling element 50 ~~has a cylinder shape~~ have cylindrical shapes, through which the core 53b is inserted. When the cylinder 53a is shifted downward, the sampling element 50 is pushed by the cylinder 53a and detached from the core 53b.

Please amend the paragraph beginning at page 28, line 11, of the specification as follows:

In summary with reference to ~~FIGs. FIG. 8 and 9~~, in use of the handling device 40, the analyte 30 is introduced in advance into the capillary tube 11 of the sampling element 1 attached to the handling device 40. Then, the piston 43a of the syringe 43 is pushed toward the reaction cell 46 to introduce the sampling element 1 into the reaction cell 46. Simultaneously, the aluminum seal 44 is torn by the tip of the piston 43a to introduce the liquid 43b into the reaction cell 46. Thereafter, steps as shown in FIGs. 7(c) and 7(d) are carried out.

Please amend the paragraph beginning at page 28, line 21, of the specification as follows:

Next, an explanation is given of the analyte treatment method using another handling device according to the present invention. As shown in FIG. 10(a), in a handling device 60, a reaction cell 63a containing liquid 63b is sealed by the sampling element 1. The analyte is retained in the capillary tube 11 of the sampling element 1 ~~(not shown)~~.

Please amend the paragraph beginning at page 30, line 9, of the specification as follows:

Application No.: 10/676,263

Due to the reaction between the analyte and the reagent, the liquid system in the reaction cell 70 may be whitened. If scattered, either light intensity, light transmissivity or absorbancy, designated as reference symbol 76, of the liquid system is measured by the photometer 73 before and after the reaction, it is allowed to confirm whether the reaction between the analyte and the reagent is completed or to measure the analyte quantitatively or qualitatively. Thus, the analyte can be treated appropriately. The analyte treatment device may be controlled by a controller 75.